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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/566,433

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EXAMINER

ROE, JESSEE RANDALL

ART UNIT

PAPER NUMBER

1793

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/566,433	Applicant(s) MUKAI ET AL.	
	Examiner Jessee Roe	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 6-10, 12, 14 and 16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 11, 13 and 15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :31 January 2006 and 29 June 2006.

DETAILED ACTION

Status of the Claims

Claims 1-5, 11, 13 and 15 drawn to a low-cobalt hydrogen storage alloy that are currently under examination and claims 6-10, 12, 14 and 16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a low-cobalt hydrogen storage alloy containing iron. Election of claims 1-5, 11, 13 and 15 was made with traverse in the Reply filed 30 April 2008. The Applicant primarily argues that search and examination of all species could be made without serious burden and cites MPEP §803, and thus argues that the species would not be patentably distinct. However, the Examiner notes that the Applicant has failed to submit evidence or identify evidence of record showing the species to be obvious variants or clearly admit on the record that this is the case. Therefore, the Applicant's election of claims 1-5, 11, 13 and 15, with traverse, is acknowledged and therefore made **Final**.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-5, 11, 13 and 15 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regards to claim 1, the addition of the word “type” to an otherwise definite expression extends the scope of the expression so as to render it indefinite. MPEP 2173.05(b)(E).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 11, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuda et al. (US 6,372,059).

In regards to claim 1, Yasuda et al. ('059) discloses a hydrogen storage alloy having a CaCu_5 structure represented by the formula $\text{MmNi}_a\text{Mn}_b\text{Al}_c\text{Co}_d$ wherein Mm denotes a misch metal, $4.0 < a \leq 4.3$, $0.25 \leq b \leq 0.4$, $0.25 \leq c \leq 0.4$, $0.3 \leq d \leq 0.5$, and $5.05 \leq a+b+c+d \leq 5.25$ which overlaps the crystal structure and composition of the instant Invention, which is prima facie evidence of obviousness. MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the claimed hydrogen storage alloy from the hydrogen storage alloy disclosed by Yasuda et al. ('059) because Yasuda et al. ('059) discloses the same utility throughout the disclosed ranges.

With respect to the recitation “wherein the a-axis length of the crystal lattice of said CaCu_5 -type structure is 499 pm or more, and the c-axis length is 405 pm or more.”

of claim 1, Yasuda et al. ('059) discloses that the a-axis would be usually 500.3 to 501 pm and the c-axis would be between 404.9 and 405.8 pm (col. 3, lines 40-60).

In regards to claim 2, Yasuda et al. ('059) discloses that a, b, c, and d satisfy the relations of $4.0 < a \leq 4.3$, $0.25 \leq b \leq 0.4$, $0.25 \leq c \leq 0.4$, $0.3 \leq d \leq 0.5$, and $5.05 \leq a+b+c+d \leq 5.25$ (abstract), which overlaps the compositional limitation of $5.25 \leq a+b+c+d < 5.30$. MPEP 2144.05 I.

With respect to the recitation "the a-axis length of the crystal lattice is not less than 500.5 pm and not more than 502.7 pm, and the c-axis length is not less than 405.6 pm and not more than 406.9 pm." of claim 2, Yasuda et al. ('059) discloses that the a-axis would be usually 500.3 to 501 pm and the c-axis would be between 404.9 and 405.8 pm (col. 3, lines 40-60).

With respect to the recitation "wherein the pulverization residual rate obtained by the following equation is 50% or more: Pulverization residual rate (%) = (post-cycling particle size/pre-cycling particle size) x 100, when a hydrogen storage alloy is ground and screened to select particles with a particle size in the range of 20 μ m and 53 μ m to provide hydrogen storage alloy powder, and after measuring with a particle size distribution measuring device the average particle size (pre-cycling particle size, D_{50}) of the hydrogen storage alloy powder, 2 g of the hydrogen storage alloy powder is weighed and placed into a PCT holder; the surfaces thereof are cleaned twice under hydrogen pressure of 1.75 MPa; then activation is carried out twice by introducing hydrogen of 3 MPa; next a cycle test using PCT device is repeated 50 times, wherein hydrogen gas of 3 MPa is introduced into 2.0 g of the hydrogen storage alloy powder to

absorb hydrogen, and the hydrogen is desorbed at 45°C; and the average particle size of the hydrogen storage alloy powder after the test of the 50 cycles (post-cycling particle size, D_{50}) is measured with a particle size distribution measuring device” of claim 11, the Examiner notes that the claims are drawn to a product and not a process. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. MPEP 2113.

In regards to claims 13 and 15, Yasuda et al. ('059) discloses that the hydrogen storage alloy would be used as the anode material (col. 4, lines 18-24).

Claims 1-5, 11, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (US 6,261,517).

In regards to claim 1, Kaneko et al. ('517) discloses a rare earth metal-nickel hydrogen storage alloy having a composition represented by the formula $RNi_aMn_bCo_cAl_dX_e$, wherein R stands for one or more rare earth elements including Sc and Y and misch metal may be used as a starting material for industrial production (abstract and col. 4, lines 30-40); X stands for one or more elements selected from the group consisting of Fe, Cu, Zn, V, and Nb (abstract); a, b, c, d, and e satisfy the relations of $3.9 \leq a < 6$, $0.45 \leq b < 1.5$, $0.01 \leq c < 0.3$, $0.4 \leq d < 1$, $0 \leq e \leq 0.2$, and

$5.2 \leq a+b+c+d+e \leq 7.5$ (abstract); and the alloy would have a CaCu_5 structure (abstract), which overlaps the low Co hydrogen storage alloy having a CaCu_5 crystal structure and composition represented by the general formula $\text{Mm Ni}_a \text{Mn}_b \text{Al}_c \text{Co}_d$, wherein Mm is a Misch metal, $4.0 \leq a \leq 4.7$, $0.3 \leq b \leq 0.65$, $0.2 \leq c \leq 0.5$, $0 < d \leq 0.35$, and $5.2 \leq a+b+c+d \leq 5.5$ of the instant invention, which is prima facie evidence of obviousness. MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the claimed hydrogen storage alloy from the hydrogen storage alloy disclosed by Kaneko et al. ('517) because Kaneko et al. ('517) discloses the same utility throughout the disclosed ranges.

With respect to the recitation "wherein the a-axis length of the crystal lattice of said CaCu_5 -type crystal structure is 499 pm or more, and the c-axis length is 405 pm or more." of claim 1, these lattice dimensions would be expected in the structure disclosed by Kaneko et al. ('517) because Kaneko et al. ('517) disclose the same or a substantially similar composition and structure. MPEP 2112.01 I.

In regards to claim 2, Kaneko et al. ('517) discloses that a, b, c, d, and e satisfy the relations of $3.9 \leq a < 6$, $0.45 \leq b < 1.5$, $0.01 \leq c < 0.3$, $0.4 \leq d < 1$, $0 \leq e \leq 0.2$, and $5.2 \leq a+b+c+d+e \leq 7.5$ (abstract), which overlaps the compositional limitation of $5.25 \leq a+b+c+d < 5.30$. MPEP 2144.05 I.

With respect to the recitation "the a-axis length of the crystal lattice is not less than 500.5 pm and not more than 502.7 pm, and the c-axis length is not less than 405.6 pm and not more than 406.9 pm." of claim 2, these lattice dimensions would be

expected in the structure disclosed by Kaneko et al. ('517) because Kaneko et al. ('517) disclose the same or a substantially similar composition and structure. MPEP 2112.01 I.

In regards to claim 3, Kaneko et al. ('517) discloses that a, b, c, d, and e satisfy the relations of $3.9 \leq a < 6$, $0.45 \leq b < 1.5$, $0.01 \leq c < 0.3$, $0.4 \leq d < 1$, $0 \leq e \leq 0.2$, and $5.2 \leq a+b+c+d+e \leq 7.5$ (abstract), which overlaps the compositional limitation of $5.30 \leq a+b+c+d < 5.35$.

With respect to the recitation "the a-axis length of the crystal lattice is not less than 500.0 pm and not more than 502.4 pm, and the c-axis length is not less than 405.9 pm and not more than 407.2 pm." of claim 3, these lattice dimensions would be expected in the structure disclosed by Kaneko et al. ('517) because Kaneko et al. ('517) disclose the same or a substantially similar composition and structure. MPEP 2112.01 I.

In regards to claim 4, Kaneko et al. ('517) discloses that a, b, c, d, and e satisfy the relations of $3.9 \leq a < 6$, $0.45 \leq b < 1.5$, $0.01 \leq c < 0.3$, $0.4 \leq d < 1$, $0 \leq e \leq 0.2$, and $5.2 \leq a+b+c+d+e \leq 7.5$ (abstract), which overlaps the compositional limitation of $5.35 \leq a+b+c+d < 5.40$.

With respect to the recitation "the a-axis length of the crystal lattice is not less than 499.8 pm and not more than 502.3 pm, and the c-axis length is not less than 406.0 pm and not more than 407.3 pm." of claim 4, these lattice dimensions would be expected in the structure disclosed by Kaneko et al. ('517) because Kaneko et al. ('517) disclose the same or a substantially similar composition and structure. MPEP 2112.01 I.

In regards to claim 5, Kaneko et al. ('517) discloses that a, b, c, d, and e satisfy the relations of $3.9 \leq a < 6$, $0.45 \leq b < 1.5$, $0.01 \leq c < 0.3$, $0.4 \leq d < 1$, $0 \leq e \leq 0.2$, and

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$5.2 \leq a+b+c+d+e \leq 7.5$ (abstract), which overlaps the compositional limitation of

$5.40 \leq a+b+c+d < 5.45$.

With respect to the recitation "the a-axis length of the crystal lattice is not less than 499.7 pm and not more than 502.3 pm, and the c-axis length is not less than 406.1 pm and not more than 407.4 pm." of claim 5, these lattice dimensions would be expected in the structure disclosed by Kaneko et al. ('517) because Kaneko et al. ('517) disclose the same or a substantially similar composition and structure. MPEP 2112.01 I.

With respect to the recitation "wherein the pulverization residual rate obtained by the following equation is 50% or more: Pulverization residual rate (%) = (post-cycling particle size/pre-cycling particle size) x 100, when a hydrogen storage alloy is ground and screened to select particles with a particle size in the range of 20 μm and 53 μm to provide hydrogen storage alloy powder, and after measuring with a particle size distribution measuring device the average particle size (pre-cycling particle size, D_{50}) of the hydrogen storage alloy powder, 2 g of the hydrogen storage alloy powder is weighed and placed into a PCT holder; the surfaces thereof are cleaned twice under hydrogen pressure of 1.75 MPa; then activation is carried out twice by introducing hydrogen of 3 MPa; next a cycle test using PCT device is repeated 50 times, wherein hydrogen gas of 3 MPa is introduced into 2.0 g of the hydrogen storage alloy powder to absorb hydrogen, and the hydrogen is desorbed at 45°C; and the average particle size of the hydrogen storage alloy powder after the test of the 50 cycles (post-cycling particle size, D_{50}) is measured with a particle size distribution measuring device" of claim 11, the Examiner notes that the claims are drawn to a product and not a process. Even

though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. MPEP 2113.

In regards to claims 13 and 15, Kaneko et al. ('517) discloses that the hydrogen storage alloy would be used as the anode material (abstract and col. 7, lines 43-51).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessee Roe whose telephone number is (571) 272-5938. The examiner can normally be reached on Monday-Friday 7:30 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John P. Sheehan/
Primary Examiner, Art Unit 1793

JR